DOCUMENT RESUME

ED 080 879 CE 000 095

AUTHOR	Bliss, Sam W.; Foster, Scott
TITLE	Pilot Test of Career Education Instructional Units. Final Report.
INSTITUTION	Northern Arizona Univ., Flagstaff. Educational Resources Management Center.
SPONS AGENCY	Coconino County Career Education Program, Flagstaff, Ariz.
PUB DATE	26 Jun 73
NOTE	70p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Career Education; *Cost Effectiveness; Elementary Grades; Instructional Materials; *Program Costs; *Program Evaluation; Units of Study (Subject Fields)

ABSTRACT

The primary objectives of the study were to determine the effectiveness of sixteen selected career education instructional units in five school districts in Coconino County, Ariz., to determine their implementation costs, and to provide for them cost/effectiveness analysis while they are still in the pilot stage. Each unit encompassed goals, performance objectives, learning activities, materials, and evaluation. A formula for measuring efficiency level of proficiency gain through pretesting and posttesting was worked out. Cost data for each unit in each class was broken down to include personnel, trips, and materials. Unit implementation costs varied widely. Cost per unit of proficiency gain was then calculated to measure effectiveness. The use of mean proficiency levels obscures individual differences and an analysis of each student's proficiency level for each unit provides more meaningful information. Teacher evaluation of the units indicates some dissatisfaction with availability of materials, the tests, and the goal and objective components in relation to activities. Eight recommendations for refinement of the units are made. Appendixes include data collection forms. (MS)

FILMED FROM BEST AVAILABLE CO

ED 080879

COCONINO COUNTY CAREER EDUCATION PROGRAM

PILOT TEST OF CAREER EDUCATION INSTRUCTIONAL UNITS

FINAL REPORT

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

JUNE 26, 1973

CE 000 095

COCONINO COUNTY CAREER EDUCATION PROGRAM
PILOT TEST FOR INSTRUCTIONAL UNITS

SUBMITTED TO:

MR. VIRGIL LANGLEY, DIRECTOR
COCONINO COUNTY CAREER EDUCATION PROGRAM
P.O. BOX 308
FLAGSTAFF, AZ. 86001

SUBMITTED BY:

DR. SAM W. BLISS, DIRECTOR
EDUCATIONAL RESOURCES MANAGEMENT CENTER
BOX 5774,
NORTHERN ARIZONA UNIVERSITY
FLAGSTAFF, AZ. 86001

MR. SCOTT FOSTER, RESEARCH ASSOCIATE
204 CAMPUS HEIGHTS
FLAGSTAFF, AZ. 86001

DATE:

JUNE 29, 1973

FOREWARD

One of the most rapidly growing and widespread movements in education today is Career Education. This movement in part has been fostered by the universal demand for educational accountability and a desire to materially improve the training of students for entry into the American economy and social environments. Arizona has been and continues to be in the forefront of the Career Education movement. Career Education learning opportunities are being introduced into Arizona's school districts at all grade levels, kindergarten through twelve.

This movement has spawned a pressing need for adequate and timely information about student achievement and costs related to the introduction of Career Education programs in Arizona. The purpose of this study was to obtain information about student achievement, costs of implementing, and the quality of selected Career Education Instructional Units in school districts of Coconino County.

Many educators involved in the promoting of Career Education in Coconino County have contributed to the conduct of this study. Grateful appreciation is given to these administrators and teachers who materially assisted and gave freely of their time.

A special note of thanks is extended to Mr. Virgil Langley, Director of the Coconino County Career Education Program and his staff for the planning and operation of the research activity. Also, commendations are due to the Coconino County Career Education Board, the five school superintendents and their career education staff, and to each of the teachers who taught the units and collected the data required in the study.

Hopefully, the end result of the information provided by this study will serve to assist in the furthering of Career Education in this county and in the state of Arizona.

Dr. Sam W. Bliss
Mr. Scott Foster

TABLE OF CONTENTS

Section		Page
I.	INTRODUCTION	1
	A. Background	1
	B. Objective Statement	2
II.	PILOT TEST PROCEDURES	2
	A. Selection of Career Education Instructional Units	3
	B. Field Test Sites	4
III.	RESULTS OF STUDY	9
	A. Achievement	9
	B. Cost	12
	C. Unit Cost-Effectiveness	35
	D. Teacher Evaluation of Unit	37
IV.	SUMMARY, CONCLUSIONS, RECOMMENDATIONS	43
	A. Summary	43
	B. Conclusions	43
	C. Recommendations	45
	APPENDICES	47

LIST OF TABLES

Table Number and Title	Page
Table 1 - Unit Achievement For All Students	11
Table 2 - Cost of Implementing Career Education Instructional Units - Number S-99 into the Classroom	13
Table 3 - Cost of Implementing Career Education Instructional Units - Number S-108 into the Classroom	14
Table 4 - Cost of Implementing Career Education Instructional Units - Number S-109 into the Classroom	15
Table 5 - Cost of Implementing Career Education Instructional Units - Number S-110 into the Classroom	16
Table 6 - Cost of Implementing Career Education Instructional Units - Number S-111 into the Classroom	17
Table 7 - Cost of Implementing Career Education Instructional Units - Number S-210 into the Classroom	18
Table 8 - Cost of Implementing Career Education Instructional Units - Number S-211 into the Classroom	19
Table 9 - Cost of Implementing Career Education Instructional Units - Number S-408 into the Classroom	20
Table 10 - Cost of Implementing Career Education Instructional Units - Number S-505 into the Classroom	21
Table 11 - Cost of Implementing Career Education Instructional Units - Number S-505 into the Classroom	22
Table 12 - Cost of Implementing Career Education Instructional Units - Number S-508 into the Classroom	23
Table 13 - Cost of Implementing Career Education Instructional Units - Number S-509 into the Classroom	24
Table 14 - Cost of Implementing Career Education Instructional Units - Number S-510 into the Classroom	25
Table 15 - Cost of Implementing Career Education Instructional Units - Number S-511 into the Classroom	26
Table 16 - Cost of Implementing Career Education Instructional Units - Number S-608 into the Classroom	27
Table 17 - Cost of Implementing Career Education Instructional Units - Number S-609 into the Classroom	28

LIST OF TABLES (continued)

Table Number and Title	Page
Table 18 - Cost of Implementing Career Education Instructional Units - Number S-710 into the Classroom	29
Table 19 - Cost of Implementing All Instructional Units Into the Elementary District of the Target Public Schools	31
Table 20 - Unit Cost Effectiveness For All Students	36
Table 21 - Teacher Evaluation of Instructional Units	41

I. INTRODUCTION

A. Background

Arizona's Career Education program is a means of encouraging the introduction of career education into the mainstream of the educational process. The record of adopting new practices in schools has not been exceptional. Perhaps the number of new programs that are replicated depends, in part, on the quality of the data about the program and their availability to educational program planners. At the present time little information is available to planners relating to student learning and the cost of implementing career education in local school districts.

The purpose of this research study was to provide the data and analytical procedures essential for presenting educational decision-makers with information relating to career education which may be useful in determining future replication in school districts. When information about program achievement is coupled with comparable cost, a more adequate basis for decisions is created.

No doubt, there are many other factors involved in the process of deciding to replicate the concepts and practices of new career education programs into school districts of this state. Some are socio-political and others are economic in nature. Most factors however, seem to reside in the basic quest to increase the effectiveness of education per se. The prime intention of this research was not to address the many problems underlying the adoption of career education, but to provide an analysis of career education that may well increase the effectiveness of the career education as a change agent

in the educational process. At this time, there is insufficient evidence that improved information about career education will, in fact, lead to wider-spread replication. However, a reasonable assumption, in the absence of this evidence, is that improved information should provide additional insights for the decision makers. At a minimum, decisions about replication should be based on (1) recognition of the career education program as a realistic alternative, and (2) knowledge of the outcomes and costs of the career education program.

B. Objective Statement

There were three primary objectives of this research study. They were:

1. To determine the effectiveness of selected career education instructional units. How well did the instructional unit accomplish its stated purpose?

2. To determine the cost of implementing selected career education instructional units in selected school districts.

3. To provide a cost/effectiveness analysis of selected career education instructional units.

The above stated objectives logically set forth the necessary methods for this research.

II. PILOT TEST PROCEDURES

The following procedures were specifically designed to provide information which would allow for the achievement of the stated objectives of this study.

A. Selection of Career Education Instructional Units

Meetings were held with staff of the following organizations for the purpose of selecting the career education instructional units (here-in-after referred to as units) to be pilot tested. Conferences were held with staff of:

1. Coconino County Career Education Program
2. Arizona's Department of Education Career Education Program and the RCU.

These discussions and a critical examination of Units available lead to the selection of sixteen Units for the pilot test. The title and code numbers of the Units are listed below along with the organization that developed the Unit.

Title	Code Number	Grade Level	Developer
Airport Awareness	S-108	Third grade	Williams School District
Ecology	S-109	Third grade	Page School District
Career Awareness	S-111	Sixth grade	Flagstaff School District
Self-Awareness	S-211	Sixth grade	Flagstaff School District
Career Clusters and Life Styles	S-110	Fifth grade	Tuba City School District
What, When, and Why	S-505	Kindgergarten	Mesa School District
Dealing With Decisions	S-408	Third grade	Mesa School District
Money Matters	S-508	Third grade	Mesa School District
Eye and Ear Tools	S-608	Third grade	Mesa School District
Yearnings and Earnings	S-509	Fourth grade	Mesa School District
Growing With Responsibilities	S-210	Fifth grade	Mesa School District
Tooling Around	S-609	Fourth grade	Mesa School District

Title	Code Number	Grade Level	Developer
What's My Line	S-511	Fifth grade	Mesa School District
Sailing With Sales	S-510	Fifth grade	Mesa School District
Reading, Writing, and Relevance	S-710	Fifth grade	Mesa School District
Career Awareness	S-99	Eighth grade	Coconino County Career Education Program

B. Field Test Sites

Five school districts were selected by the Coconino County Administrative Achievement Council to cooperate in the pilot test. Selection of the school districts was made after discussions with Mr. Virgil Langley, Director, Coconino County Career Education Program and the Coconino County Board for Career Education. The five school districts selected for the study, superintendents, and other career education staff are:

School District	Superintendent and Staff
Flagstaff District No. 1	Mr. David Williams, Superintendent Mr. Sturgeon Cromer, Director of Career Education Mr. Mike Miller, Co-ordinator Mrs. Jenny Erwin, Co-ordinator
Fredonia District No. 6	Dr. Bill McLaughlin, Superintendent
Page District No. 8	Mr. Ray Bradshaw, Superintendent Mr. George O'Reilly, Co-ordinator
Tuba City District No. 15	Mr. Frank Glotfelty, Superintendent Mr. Jerry O'Brien, Co-ordinator
Williams District No. 2	Dr. John Watson, Superintendent

Also, assisting with school site selection were members from the Coconino County Career Education Program. They are:

Mr. Jim Sanders, Co-ordinator Consultant
Mrs. Bea Langley, Co-ordinator Consultant

Each cooperating school district arranged for the appropriate number of classrooms and teachers to become involved in the pilot test activity. The teachers involved in the pilot test are provided below:

Flagstaff District No. 6

Teachers	Grade Level
Connie Haines	Kindergarten
Lila Siedel	Third grade
Pamela Pedrow	Third grade
Helen Sitterly	Third grade
Robert Hayes	Fourth grade
Mary Dalegowski	Fourth grade
Joe Vega	Fourth grade
Evelyn McCray	Fifth grade
Alfred Sharde	Fifth grade
Maybelle Copeland	Fifth grade
Eddie Piper	Fifth grade
Lee Treece	Sixth grade
Jean Chance	Sixth grade
Jerry Ulrey	Sixth grade

Fredonia District No. 6

Teachers	Grade Level
Paul Heaton	Third grade
Velden Black	Fifth grade
Dan Haycock	Sixth grade

Page District No. 8

Teachers	Grade Level
Thelma LaFever	Kindergarten
Lucille O'Reilly	Third grade
Alice Koetje	Third grade
June Wakefield	Fourth grade
Beverly Huntley	Fifth grade
Allyn Watson	Fifth grade
Virginia Mee	Sixth grade

Tuba City District No. 15

Teachers	Grade Level
Ida Feibus	Kindergarten
Betrice Richmond	Third grade
Elizabeth Lockett	Third grade
Evelyn Parker	Fourth grade
Peggy Britenbach	Fifth grade
Patricia Baca	Fifth grade
Alma Thomas	Sixth grade

Williams District No. 2

Teachers	Grade level
Marilyn Duffy	Third grade
Charlene Myers	Third grade
Ruddy Sanchez	Fourth grade
Dale Winchester	Fifth grade
John Fain	Sixth grade
Richard Hoyt	Eighth grade

Each Unit was introduced and taught in a single classroom under the direction of the teacher. Prior to the teaching of the Units two training workshops were held for the purpose of introducing the teacher to the Unit to be taught and informing the teachers about the data collection forms. The workshops held were:

> Page District No. 8
> April 17, 1973 4:30p.m. - 7:30p.m.
> The Page and Fredonia teachers attended this workshop (see Appendix for the workshop agenda).
>
> Flagstaff District No. 1
> April 25, 1973 6:00p.m. - 9:30p.m.
> The Flagstaff, Tuba City, and Williams teachers attended the second workshop (see Appendix for the agenda).

Also, in attendance at both workshops were staff from the Coconino County Career Education Program.

Data Collection Forms

Each cooperating teacher in the five districts was given the data collection forms, the Unit, and the pre- and post-tests at these two workshops. Four data collection forms were prepared for obtaining information needed in the pilot test project. They were:

1. Administrative Cost Data Instrument
2. Unit Cost Data Instrument
3. Student Achievement Form
4. Teacher Evaluation Form

Copies of these forms are located in the Appendix.

The Administrative Cost Data Instruments were compelted in interviews with appropriate central office staff of each cooperating district. The three other data collection forms were completed by the teacher who taught the Unit. The four data collection forms were sent to Project staff immeidately upon completion of teaching the Unit on or before May 18, 1973.

Results of the study appear in the following section.

III. RESULTS OF STUDY

A. Achievement

Each Unit included in the Pilot Test Project was specifically developed to provide students with the opportunity to learn specific concepts related to career education. All Units included in the test were structured in the recommended format as set forth in the Arizona Career Education Program. The general structure encompassed the basic components of:

1. Goals
2. Performance Objectives
3. Learning Activities
4. Materials and Supplies
5. Equipment
6. Evaluation Plan (Pre-test and Post-test)

Although each Unit was planned to consume approximately 10 hours of instructional time, teachers were encouraged to modify the Unit in order to meet the specific learning needs of the students in the classroom.

Student achievement for each Unit was determined by calculating the learning gain which was identified as the difference between the pre-test score (beginning knowledge) and the post-test (total knowledge).

An individual student Unit proficiency level was computed by the following method.

COMPUTATION OF PROFICIENCY LEVEL

Steps	
1. Total maximum score (40 possible correct)	100.0%
2. Pre-test score (pre-test score 10 ÷ 40)	— 25 %
3. To be learned (new knowledge: No. 1 -- No. 2)	75 %
4. Post-test score (total knowledge): post-test score 36 ÷ 40)	90 %
5. Pre-test score (entry knowledge: No. 2)	— 25
6. Achieved knowledge (gain: No. 4 - No. 5)	65 %
7. Achieved knowledge (knowledge gain: No. 6)	65 %
8. To be learned (No. 3)	75 %
9. Program efficiency level (No. 7 ÷ No. 8: student's percent gain of new knowledge)	86.6%

Summary achievement information was prepared for each Unit in order to protect the individual student. Table 1 displays Unit achievement information for each Unit included in the study. Data not included in Table 1, such as I.Q. was not available at the classroom level.

Generally, the student learning gain or loss (difference between the pre-test and post-test) was not as large as expected. Therefore the Units at a group did not yield as high as a proficiency level as one might have desired to obtain. It also should be noted that proficiency level varied between Units that were replicated in different classrooms. This was due largely to the differences existing in the students of the classrooms. Where the mean I.Q. was higher the proficiency level tended to be greater.

TABLE 1 UNIT ACHIEVEMENT FOR ALL STUDENTS

Unit No.	District	Grade	No. of Students	Mean Age	Mean I.Q.	Max. Score	Mean Pre-Test	Mean Post-test	Mean Gain	Mean Proficiency Gain %
S-99	Williams	8	13	14	101	66	47	59	11	62.9
S-108	Flagstaff	3	25	8	109	25	9	20	10	66.6
S-108	Williams	3	18		99	25	12	17	6	43.0
S-109	Page	3	19	9		23	12	15	2	17.8
S-109	Fredonia	3	24	8		100	67	81	13	37.6
S-110	Flagstaff	6	24	12		29	15	23	8	65.9
S-110	Tuba City	5	28	11		109	34	52	18	24.2
S-110	Fredonia	5	12	10		109	59	70	10	21.2
S-111	Tuba City	6	30	12		41	20	25	5	20.5
S-210	Flagstaff	5	32	11	114	28	19	23	4	35.4
S-210	Flagstaff	5	19	10		28	17	19	2	11.2
S-211	Flagstaff	6	27	11	109	33	19	27	8	61.0
S-211	Flagstaff	6	21	11		33	8	13	5	20.4
S-408	Tuba City	3	15	9		35	12	14	2	7.8
S-408	Flagstaff	3	19	8		36	17	22	5	25.0
S-505	Tuba City	K	27	5		27	9	13	5	25.2
S-505	Flagstaff	K	20	5	109	20	10	13	3	28.5
S-505	Page	K	27	5		43	31	39	8	68.8
S-505	Page	K	32	6		43	30	37	8	59.0
S-508	Flagstaff	3	21	8		29	21	22	1	18.7
S-508	Williams	3	18	9		18	14	15	0	
S-509	Flagstaff	4	28		98	23	11	14	3	27.0
S-509	Flagstaff	4	31	9	99	23	6	12	7	38.2
S-509	Williams	4	28	9		23	12	16	3	34.2
S-510	Williams	5	26	11		34	13	19	6	25.5
S-510	Flagstaff	5	21	11	108	34	18	27	9	55.0
S-510	Page	5	28	11		34	15	25	10	54.8
S-511	Williams	6	37	12	97	48	24	37	13	55.7
S-511	Page	6	55	12		48	24	33	9	36.7
S-511	Fredonia	6	22	12	100	48	29	34	5	29.0
S-608	Tuba City	3	22	9		34	16	17	1	3.0
S-608	Page	3	22	8		34	21	29	8	61.4
S-609	Tuba City	4	24	10		27	18	21	3	33.6
S-609	Page	4	27	10		27	9	10	1	5.3
S-609	Flagstaff	4	32			27	8	11	3	18.4
S-710	Tuba City	5	36	10		32	21	26	5	31.5
S-710	Flagstaff	5	21	11		32	8	11	3	10.7
S-710	Page	5	26			32	19	22	3	26.0

B. Cost

This section of the study contains the findings of the data collection activity relating to the cost of implementing career education instructional units into the classrooms of the five target districts. Comments will introduce the table and data displayed. Where deemed essential other statements may be made to clarify the data included in the table.

1. Cost of Implementing Career Education Instructional Units

Cost data for each unit is reported in dollars and cents. Cost information collected is limited to the following three cost areas and their respective cost elements:

a. Instructional personnel

1) Orientation time
2) In-service travel time
3) Teacher planning time
4) Teacher teaching time
5) Para-professional time

b. Field trips

1) Vehicle operation and maintenance
2) Vehicle operator

c. Instructional materials

1) Normal classroom instructional materials
2) Resource materials
3) Additional cost items

For each cost area and cost element, a mean cost is computed as well as a per pupil cost. ADM is reported for each classroom and a mean ADM is computed for each unit. Total unit implementation cost is reported at the bottom of each table.

Table 2

Cost of Implementing Career Education Instructional Units
Number S-99 into the Classroom

IU Name A Job For You In Construction

Grade 8th

ADM, Cost Areas and Cost Elements	Williams	Mean	Per Pupil Cost
ADM	15	15	
Orientation Time	14.52	14.52	.97
In-Service Travel	5.03	5.03	.34
Teacher Planning Time	14.52	14.52	.97
Teaching Time	22.34	22.34	1.49
Para-Professional			
Instructional Personnel	56.41	56.41	3.76
Vehicle Operation Maintenance			
Vehicle Operators Cost			
Total Field Trip Cost			
Normal Instructional Materials	2.68	2.68	.18
Resource Materials			
AV Equipment			
Additional Cost Items	2.39	2.39	.16
Total Instructional Materials	5.07	5.07	.34
Total Package Implementation	61.49		4.10

Table 3

Cost of Implementing Career Education Instructional Units
Number S-108 into the Classroom

IU Name Airport Awareness

Grade 3rd

ADM, Cost Areas and Cost Elements	Flag.	Wlms.	Mean	Per Pupil Cost
ADM	27	19	23	
Orientation Time	18.91	10.82	14.87	.65
In-Service Travel		3.75	1.87	.08
Teacher Planning Time	45.71	8.74	27.22	1.18
Teaching Time	44.92	38.71	41.82	1.82
Para-Professional				
Instructional Personnel	109.54	62.02	85.78	3.73
Vehicle Operation Maintenance	9.24	29.40	19.32	.84
Vehicle Operators Cost				
Total Field Trip Cost	9.24	29.40	19.32	.84
Normal Instructional Materials	3.00	6.07	4.54	.20
Resource Materials				
AV Equipment				
Additional Cost Items	5.23		2.62	.11
Total Instructional Materials	8.23	6.07	7.15	.31
Total Package Implementation	127.01	97.49	112.25	4.88

Table 4

Cost of Implementing Career Education Instructional Units
Number S-109 into the Classroom

IU Name Ecology

Grade 3rd

ADM, Cost Areas and Cost Elements	Page	Fred.	Mean	Per Pupil Cost
ADM	27	22	24.50	
Orientation Time	23	25.81	24.41	.100
In-Service Travel	.64	25.81	13.23	.54
Teacher Planning Time	15.97	25.81	20.89	.85
Teaching Time	77.94	89.62	83.78	3.42
Para-Professional	1.13	27.29	14.21	.58
Instructional Personnel	118.69	194.34	156.51	6.39
Vehicle Operation Maintenance		80.00	40.00	1.63
Vehicle Operators Cost				
Total Field Trip Cost		80.00	40.00	1.63
Normal Instructional Materials	5.83	2.08	3.96	.16
Resource Materials		24.00	12.00	.49
AV Equipment				
Additional Cost Items		8.76	4.38	.18
Total Instructional Materials	5.83	34.84	20.34	.83
Total Package Implementation	124.51	309.19	216.85	8.85

Table 5

Cost of Implementing Career Education Instructional Units Number S-110 into the Classroom

IU Name Career Clusters

Grade 5th

Cost ADM, Cost Areas and Elements	Flag.	Tuba	Fred.	Mean	Per Pupil Cost
ADM	24	32	13	23	
Orientation Time	16.60	25.89	24.50	22.33	.97
In-Service Travel		17.26	21.19	12.81	.56
Teacher Planning Time	15.2	33.08	41.72	30.00	1.30
Teaching Time	38.27	140.21	70.85	83.11	3.61
Para-Professional Instructional Personnel	70.08	216.43	158.26	148.26	6.45
Vehicle Operation Maintenance		85.00		28.33	1.23
Vehicle Operators Cost		24.48		8.16	.36
Total Field Trip Cost		109.48		36.49	1.59
Normal Instructional Materials	2.13	7.29	1.48	3.63	.16
Resource Materials		11.00	25.00	12.00	.52
AV Equipment					
Additional Cost Items					
Total Instructional Materials	2.13	18.29	26.48	15.63	.68
Total Package Implementation	72.22	344.19	184.73	200.38	8.71

Table 6

Cost of Implementing Career Education Instructional Units
Number S-111 into the Classroom

IU Name Career Awareness

Grade 6th

ADM, Cost Areas and Cost Elements	Taba	Mean	Per Pupil Cost
ADM	30	30	
Orientation Time	28.89	28.89	.96
In-Service Travel	19.26	19.26	.64
Teacher Planning Time	139.63	139.63	4.65
Teaching Time	120.37	120.37	4.01
Para-Professional			
Instructional Personnel	308.14	308.14	10.27
Vehicle Operation Maintenance			
Vehicle Operators Cost			
Total Field Trip Cost			
Normal Instructional Materials	5.69	5.69	.19
Resource Materials			
AV Equipment			
Additional Cost Items			
Total Instructional Materials	5.69	5.69	.19
Total Package Implementation	313.84	313.84	10.46

Table 7

Cost of Implementing Career Education Instructional Units
Number S-210 into the Classroom

IU Name Growing With Responsibilities

Grade 5th

ADM, Cost Areas and Cost Elements	Flag.	Flag.	Mean	Per Pupil Cost
ADM	32	24	28	
Orientation Time	15.14	21.59	18.37	.66
In-Service Travel				
Teacher Planning Time	27.18	27.89	27.53	.98
Teaching Time	74.98	86.37	80.67	2.88
Para-Professional	6.95		3.48	.12
Instructional Personnel	124.25	135.85	130.05	4.65
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	2.84	2.13	2.49	.09
Resource Materials		37.63	18.82	.67
AV Equipment				
Additional Cost Items				
Total Instructional Materials	2.84	39.76	21.30	.76
Total Package Implementation	127.09	175.61	151.35	5.41

Table 8

Cost of Implementing Career Education Instructional Units
Number S-211 into the Classroom

IU Name Self Awareness

Grade 6th

ADM, Cost Areas and Cost Elements	Flag.	Flag.	Mean	Per Pupil Cost
ADM	28	27	27.5	
Orientation Time	29.96	20.24	25.1	..91
In-Service Travel				
Teacher Planning Time	31.62	14.62	23.12	.84
Teaching Time	81.55	55.10	68.33	2.49
Para-Professional		20.86	10.43	.38
Instructional Personnel	143.13	110.82	126.98	4.62
Vehicle Operation Maintenance	6.25	8.4	7.33	.27
Vehicle Operators Cost				
Total Field Trip Cost	6.25	8.40	7.33	.27
Normal Instructional Materials	2.49	2.40	2.44	.09
Resource Materials		2.00	1.00	.04
AV Equipment				
Additional Cost Items				
Total Instructional Materials	2.49	4.40	3.44	.13
Total Package Implementation	151.87	123.62	137.75	5.01

Table 9

Cost of Implementing Career Education Instructional Units Number S-408 into the Classroom

IU Name Dealing With Decisions

Grade 3rd

ADM, Cost Areas and Cost Elements	Tuba	Flag.	Mean	Per Pupil Cost
ADM	22	22	22	
Orientation Time	24.71	15.18	19.95	.91
In-Service Travel	21.96		10.98	.50
Teacher Planning Time	91.51	19.83	55.67	2.53
Teaching Time	51.61	37.72	44.67	2.03
Para-Professional	1.84	4.64	3.24	.15
Instructional Personnel	191.63	77.36	134.50	6.11
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	4.18	2.44	3.31	.15
Resource Materials	30.41		15.21	.69
AV Equipment				
Additional Cost Items				
Total Instructional Materials	34.59	2.44	18.52	.84
Total Package Implementation	226.22	79.81	153.01	6.96

Table 10

Cost of Implementing Career Education Instructional Units Number S-505 into the Classroom

IU Name What, When, Why

Grade Kindergarten a.m.

ADM, Cost Areas and Cost Elements	Tuba	Flag.	Page	Mean	Per Pupil Cost
ADM	22	26	30	26	
Orientation Time	16.34	20.95	24.54	20.61	.79
In-Service Travel	13.07		.91	4.66	.18
Teacher Planning Time	31.38	136.57	139.08	102.34	3.94
Teaching Time	61.45	98.55	118.18	92.72	3.57
Para-Professional	11.01	2.90	63.66	25.86	.99
Instructonal Personnel	133.25	258.96	346.37	246.19	9.47
Vehicle Operation Maintenance		3.10	.50	1.20	.05
Vehicle Operators Cost			4.13	1.38	.05
Total Field Trip Cost		3.1	4.63	2.58	.10
Normal Instructional Materials	12.53	5.78	14.13	10.81	.42
Resource Materials			106.43	35.48	1.36
AV Equipment					
Additional Cost Items			4.15	1.38	.05
Total Instructional Materials	12.53	5.78	124.71	47.67	1.83
Total Package Implementation	145.78	267.84	475.70	296.44	11.40

Table 11

Cost of Implementing Career Education Instructional Units
Number S-505 into the Classroom

IU Name What, When, Why

Grade Kindergarten p.m.

ADM, Cost Areas and Cost Elements	Page	Mean	Per Pupil Cost
ADM	33	33	
Orientation Time	28.64	28.64	.87
In-Service Travel			
Teacher Planning Time	163.33	163.33	4.95
Teaching Time	156.96	156.96	4.76
Para-Professional	30.51	30.51	.93
Instructional Personnel	379.43	379.43	11.50
Vehicle Operation Maintenance	2.5	2.5	.08
Vehicle Operators Cost	3.83	3.83	.12
Total Field Trip Cost	6.33	6.33	.19
Normal Instructional Materials	15.54	15.54	.47
Resource Materials	190.03	190.03	5.76
AV Equipment			
Additional Cost Items	4.44	4.44	.14
Total Instructional Materials	210.01	210.01	6.36
Total Package Implementation	595.77	595.77	18.05

Table 12

Cost of Implementing Career Education Instructional Units
Number S-508 into the Classroom

IU Name Money Matters

Grade 3rd

ADM, Cost Areas and Cost Elements	Flag.	Wlms.	Mean	Per Pupil Cost
ADM	22	19	20.5	
Orientation Time	18.01	12.92	15.47	.75
In-Service Travel		4.47	2.24	.11
Teacher Planning Time	40.18	23.86	32.02	1.56
Teaching Time	64.42	39.56	51.99	2.54
Para-Professional	4.25		2.12	.10
Instructional Personnel	126.86	80.81	103.84	5.07
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	2.44	6.07	4.26	.21
Resource Materials				
AV Equipment				
Additional Cost Items		3.52	1.76	.09
Total Instructional Materials	2.44	9.59	6.02	.29
Total Package Implementation	129.31	90.40	109.85	5.36

Table 13

Cost of Implementing Career Education Instructional Units Number S-509 into the Classroom

IU Name Money Matters

Grade 4th

ADM, Cost Areas and Cost Elements	Flag	Flag	Wlms.	Mean	Per Pupil Cost
ADM	31	29	28	29.33	
Orientation Time	23.74	14.76	15.66	18.06	.62
In-Service Travel			5.42	1.81	.06
Teacher Planning Time	31.66	47.69	20.85	33.40	1.14
Teaching Time	66.28	71.54	66.87	68.23	2.33
Para-Professional	.39			.13	
Instructional Personnel	122.07	133.99	108.80	121.62	4.15
Vehicle Operation Maintenance	5.22	5.18		3.47	.12
Vehicle Operators Cost					
Total Field Trip Cost	5.22	5.18		3.47	.12
Normal Instructional Materials	2.76	2.58	7.16	4.16	.14
Resource Materials	32.00	48.00		26.67	.91
AV Equipment					
Additional Cost Items			2.52	.84	.03
Total Instructional Materials	34.76	50.58	9.68	31.67	1.08
Total Package Implementation	162.04	189.75	118.48	156.76	5.34

Table 14

Cost of Implementing Career Education Instructional Units
Number S-510 into the Classroom

IU Name Sailing With Sales

Grade 5th

ADM, Cost Areas and Cost Elements	Wlms.	Flag	Page	Mean	Per Pupil Cost
ADM	26	21	34	27	
Orientation Time	16.33	23.44	34.88	24.89	.92
In-Service Travel	5.65	1.85		2.50	.09
Teacher Planning Time	27.01	59.07	49.00	45.03	1.67
Teaching Time	76.64	130.14	101.33	102.70	3.80
Para-Professional			4.71	1.57	.06
Instructional Personnel	125.64	214.50	189.92	176.69	6.54
Vehicle Operation Maintenance					
Vehicle Operators Cost					
Total Field Trip Cost					
Normal Instructional Materials	6.64	1.87	7.34	5.28	.20
Resource Materials					
AV Equipment					
Additional Cost Items		.39	3.36	1.25	.05
Total Instructional Materials	6.64	2.26	10.70	6.53	.24
Total Package Implementation	132.29	216.76	200.62	183.22	6.79

Table 15

Cost of Implementing Career Education Instructional Units
Number S-511 into the Classroom

IU Name What's My Line

Grade 6th

ADM, Cost Areas and Cost Elements	Wlms.	Page	Fred.	Mean	Per Pupil Cost
ADM	37	64	22	41	
Orientation Time	29.95	26.86	23.18	26.66	.65
In-Service Travel			20.05	6.83	.16
Teacher Planning Time	39.21	13.07	23.18	25.15	.61
Teaching Time	81.28	74.76	75.18	77.07	1.88
Para-Professional			6.25	2.08	.05
Instructional Personnel	150.44	114.68	147.84	137.65	3.36
Vehicle Operation Maintenance					
Vehicle Operators Cost					
Total Field Trip Cost					
Normal Instructional Materials	9.46	13.81	2.08	8.45	.21
Resource Materials	20.35		10.84	10.40	.25
AV Equipment					
Additional Cost Items					
Total Instructional Materials	29.81	13.81	12.92	18.85	.46
Total Package Implementation	180.24	128.50	160.76	156.50	3.82

Table 16

Cost of Implementing Career Education Instructional Units Number S-608 into the Classroom

IU Name Eye And Ear Tools

Grade 3rd

ADM, Cost Areas and Cost Elements	Tuba	Page	Mean	Per Pupil Cost
ADM	29	28	28.5	
Orientation Time	24.78	38.18	31.48	1.10
In-Service Travel	29.73		14.87	.52
Teacher Planning Time	94.15	103.93	99.04	3.48
Teaching Time	59.46	77.42	68.44	2.40
Para-Professional	5.51	18.65	12.08	.42
Instructional Personnel	213.62	238.18	225.90	7.93
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	8.26	8.53	8.39	.30
Resource Materials	17.32		8.66	.30
AV Equipment				
Additional Cost Items				
Total Instructional Materials	25.58	8.53	17.05	.60
Total Package Implementation	239.20	246.71	242.96	8.53

Table 17

Cost of Implementing Career Education Instructional Units Number S-609 into the Classroom

IU Name Tooling Around

Grade 4th

ADM, Cost Areas and Cost Elements	Tuba	Page	Flag	Mean	Per Pupil Cost
ADM	24	30	34	29.33	
Orientation Time	21.05	42.93	11.34	25.11	.86
In-Service Travel	36.08	1.02		12.37	.42
Teacher Planning Time	33.83	54.18	37.31	41.77	1.42
Teaching Time	45.86	122.67	46.29	71.60	2.44
Para-Professional		8.29	8.11	5.47	.19
Instructional Personnel	136.81	229.09	103.05	156.32	5.33
Vehicle Operation Maintenance					
Vehicle Operators Cost					
Total Field Trip Cost					
Normal Instructional Materials	5.47	6.48	3.02	4.99	.17
Resource Materials	33.00			11.00	.38
AV Equipment					
Additional Cost Items					
Total Instructional Materials	38.47	6.48	3.02	15.99	.55
Total Package Implementation	175.28	235.56	106.07	172.30	5.87

Table 18

Cost of Implementing Career Education Instructional Units
Number S-710 into the Classroom

IU Name Readin', Writin', Relevance

Grade 5th

ADM, Cost Areas and Cost Elements	Tuba	Flag.	Page	Mean	Per Pupil Cost
ADM	13	15	21	16.33	
Orientation Time	15.95	12.87	23	17.27	1.06
In-Service Travel	31.90			10.63	.65
Teacher Planning Time	26.58	38.00	30.03	31.54	1.93
Teaching Time	63.80	63.24	60.69	62.58	3.83
Para-Professional			5.65	1.88	.12
Instructional Personnel	138.23	114.10	119.37	123.90	7.59
Vehicle Operation Maintenance		4.15		1.38	.09
Vehicle Operators Cost					
Total Field Trip Cost		4.15		1.38	.09
Normal Instructional Materials	2.96	1.33	4.53	2.94	.18
Resource Materials					
AV Equipment					
Additional Cost Items					
Total Instructional Materials	2.96	1.33	4.53	2.94	.18
Total Package Implementation	141.19	119.59	123.91	128.23	7.85

A compilation of all instructional units implemented is presented in Table 19. The average, or mean, cost for each identified cost area and the cost elements constituting that area are presented by instructional unit. A total cost of implementing all the career education instructional units is also reported for the cost areas and their cost elements as well as a total mean cost. A total mean per pupil cost is also reported by cost area and cost element. At the bottom of the table a total implementation cost for all districts is shown along with an average or mean, cost per unit and a total for all districts, per pupil cost for total implementation. Unit implementation costs vary widely. Several factors caused the wide variation. Teacher costs vary because of a wide range of salaries being paid by the districts. Instructional time for each Unit was different thus affecting instructional cost. Use of teaching materials varied considerably and field trips further caused cost variances. A general over-all interpretation would be meaningless. A detailed study of individual Unit cost factors yields more useful information. Comparisons of each Unit costs are enhanced through the data presented in Table 19.

TABLE 19

COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS

INTO THE ELEMENTARY DISTRICT OF THE

TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-99	S-108	S-109	S-110	S-111
ADM	15	23	24.5	23	30
Orientation Time	14.52	14.87	24.41	22.33	28.89
In-Service Travel	5.03	1.87	13.22	12.82	19.26
Teacher Planning Time	14.52	27.22	20.89	30.00	139.63
Teaching Time	22.24	41.82	83.78	83.11	120.37
Para-Professional			14.21		
Instructional Personnel	56.41	85.78	156.51	148.26	308.14
Vehicle Operation Maintenance		19.32	40.00	28.33	
Vehicle Operators Cost				8.16	
Total Field Trip Cost		19.32	40.00	36.49	
Normal Instructional Materials	2.68	4.53	3.96	3.63	5.69
Resource Materials			12.00	12.00	
AV Equipment					
Additional Cost Items	2.39	2.62	4.38		
Total Instructional Materials	5.07	7.15	20.34	15.63	5.69
Total Package Implementation	61.49	112.25	216.85	200.38	313.84

TABLE 19 (continued)

COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS

INTO THE ELEMENTARY DISTRICT OF THE

TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-210	S-211	S-408	S-505	S-505
ADM	28	27	22	26	33
Orientation Time	18.37	25.10	19.95	20.61	28.64
In-Service Travel			10.98	4.66	
Teacher Planning Time	27.53	23.12	55.67	102.34	163.33
Teaching Time	80.67	68.33	44.67	92.92	156.96
Para-Professional	3.38	10.43	3.24	25.85	30.51
Instructional Personnel	130.05	126.98	134.50	246.19	379.43
Vehicle Operation Maintenance		7.33		1.20	2.50
Vehicle Operators Cost				1.38	3.83
Total Field Trip Cost		7.33		2.58	6.33
Normal Instructional Materials	2.49	2.44	3.31	10.81	15.54
Resource Materials	18.51	1.00	15.21	35.48	190.03
AV Equipment					
Additional Cost Items				1.38	4.44
Total Instructional Materials	21.30	13.44	18.52	47.67	210.01
Total Package Implementation	151.35	137.75	153.01	296.44	595.77

TABLE 19 (continued)

COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS

INTO THE ELEMENTARY DISTRICT OF THE

TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-609	S-710	TOTAL	MEAN COST	MEAN PER-PUPIL COST
ADM	29.33	16.33	443.10	26.12	
Orientation Time	25.11	17.27	376.59	22.15	.85
In-Service Travel	12.37	10.63	118.93	6.10	.27
Teacher Planning Time	41.77	31.54	912.20	53.66	2.05
Teaching Time	71.60	62.58	1297.39	76.32	2.92
Para-Professional	5.47	1.88	113.05	6.65	.25
Instructional Personnel	156.32	123.90	2818.17	165.77	6.35
Vehicle Operation Maintenance		1.38	103.53	6.09	.23
Vehicle Operators Cost			13.37	.79	.03
Total Field Trip Cost		1.38	116.89	6.88	.26
Normal Instructional Materials	4.99	2.94	93.57	5.50	.21
Resource Materials	11.00		341.25	20.07	.77
AV Equipment					
Additional Cost Items			19.06	1.12	.04
Total Instructional Materials	15.99	2.94	453.88	26.70	1.02
Total Package Implementation	172.30	238.23	3388.94	199.35	7.63

TABLE 19 (continued)

COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS

INTO THE ELEMENTARY DISTRICT OF THE

TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-508	S-509	S-510	S-511	S-608
ADM	20.5	29.33	27	41	28.5
Orientation Time	15.47	18.06	24.89	26.66	31.48
In-Service Travel	2.24	1.81	2.50	6.68	14.87
Teacher Planning Time	32.02	33.40	45.03	25.15	99.04
Teaching Time	51.99	68.23	102.70	77.07	68.44
Para-Professional	2.12	.13	1.57	2.08	12.08
Instructional Personnel	103.84	121.62	176.69	137.65	225.90
Vehicle Operation Maintenance		3.47			
Vehicle Operators Cost					
Total Field Trip Cost		3.47			
Normal Instructional Materials	4.26	4.16	5.28	8.45	8.39
Resource Materials		26.67		10.40	8.66
AV Equipment					
Additional Cost Items	1.76	.84	1.25		
Total Instructional Materials	6.02	31.67	6.53	18.85	17.05
Total Package Implementation	109.85	156.76	183.22	156.50	242.95

C. Unit Cost-Effectiveness

Cost per student and per unit of proficiency were calculated to provide further comparative information. As would be expected cost per student decreases with the larger number of students in the classroom. However, when the cost per unit of proficiency is computed those Units having higher proficiency levels, regardless of the number of students, yielded lower per unit costs. This is perhaps a better standard than cost per student because it provides information about how effective the Unit delivered learning gains as related to the money expended.

The Units that obtained the higher proficiency amounts had the lower cost per unit of proficiency. Thus Units with higher proficiency levels (effectiveness of Unit taught) had a high corresponding efficiency level (a better use of district resources to deliver education to the student).

It should be noted that proficiency levels for individual students varied widely for all Units taught. The use of mean proficiency levels for the Units obscures individual differences. The general result of using the mean proficiency level for each Unit is that it tends to deflat or hide the true value of the Unit for the individual student. A few students with low proficiency levels can markably effect the over-all Unit proficiency level. A careful analysis of each student's proficiency level in each Unit taught would provide much more meaningful information about the effectiveness of the Unit to deliver its performance objectives. However, this data is not reported because of the desire to protect the confidential nature of this type of information. Individual student data has been submitted to the Director of the Coconino County Career Education Program.

TABLE 20. UNIT COST EFFECTIVENESS FOR ALL STUDENTS

Unit Title	Unit No.	District	Grade	Number of Students	Acutal Prof. Level	Cost of Unit	Cost per Student	Cost per Unit of Proficiency
Career Awareness	S-99	Williams	8	13	62.9%	$ 61.49	$ 4.73	$ 7.53
Airport Awareness	S-108	Flagstaff	3	25	66.6	127.00	5.08	7.63
Airport Awareness	S-108	Williams	3	18	43.0	97.49	5.42	12.60
Ecology	S-109	Page	3	19	17.8	124.51	6.55	36.79
Ecology	S-109	Fredonia	3	18	37.6	309.19	17.18	45.74
Career Clusters	S-110	Flagstaff	5	24	65.9	72.23	3.01	4.57
Career Clusters	S-110	Tuba City	5	28	24.2	344.19	12.30	50.77
Career Clusters	S-110	Fredonia	5	12	21.2	184.73	15.39	72.72
Career Awareness	S-111	Tuba City	6	30	20.5	313.84	10.46	51.01
Growing with Resp.	S-210	Flagstaff	5	32	35.4	127.09	3.97	11.22
Growing with Resp.	S-210	Flagstaff	5	19	11.2	175.61	9.24	82.37
Self Awareness	S-211	Flagstaff	6	27	61.0	151.87	5.63	9.22
Self Awareness	S-211	Flagstaff	6	21	20.4	123.62	5.89	28.88
Dealing with Dec.	S-408	Tuba City	3	15	7.8	204.56	13.64	175.56
Dealing iwth Dec.	S-408	Flagstaff	3	19	25.0	79.81	4.20	16.78
What, When, Why	S-505	Tuba City	K	27	25.2	145.78	5.40	21.44
What, When, Why	S-505	Flagstaff	K	20	28.5	267.84	13.39	46.94
What, When, Why	S-505	Page	K	27	68.8	475.70	17.62	25.59
Money Matters	S-508	Flagstaff	3	21	18.7	129.31	6.16	32.93
Money Matters	S-508	Williams	3	18	0.0	90.40	5.02	-58.96
Yearnings, Earnings	S-509	Flagstaff	4	28	27.0	189.75	6.77	25.14
Yearnings, Earnings	S-509	Flagstaff	4	31	38.2	162.04	5.23	13.68
Yearnings, Earnings	S-509	Williams	4	28	34.2	118.48	4.23	12.36
Sailing with Sails	S-510	Williams	5	26	25.5	126.63	4.87	19.10
Sailing with Sails	S-510	Flagstaff	5	21	55.0	216.76	10.32	18.75
Sailing with Sails	S-510	Page	5	28	54.8	200.62	7.17	13.09
What's My Line	S-511	Williams	5	37	55.7	180.24	4.87	8.75
What's My Line	S-511	Page	5	55	36.7	128.50	2.33	6.36
What's My Line	S-511	Fredonia	5	22	29.0	160.76	7.31	25.24
Ear, Eye Tools	S-608	Page	3	22	61.4	246.71	11.21	18.26
Tooling Around	S-609	Tuba City	4	24	33.6	175.28	7.30	21.71
Tooling Around	S-609	Page	4	27	5.3	235.54	8.72	163.80
Tooling Around	S-609	Flagstaff	4	32	18.4	106.07	3.32	18.02
Reading, Writing, Rel.	S-710	Tuba City	5	26	31.5	141.19	5.43	
Reading, Writing, Rel.	S-710	Flagstaff	5	21	10.7	119.57	5.69	53.38
Reading, Writing, Rel.	S-710	Page	5	26	26.0	129.91	5.00	19.23

D. Teacher Evaluation of Unit

Teachers responsible for implementing instructional units into the classroom provided information in the form of written comments. These comments were suggestions for further modifications in the instructional units in addition to those indicated in the table following the teacher comments. The following is a composite of comments and suggestions for modification by instructional unit.

S-109 Ecology

1) Provide a better example of a water cycle in the appendix.

2) Vocabulary on the pre and post test was too difficult for the majority of the class.

3) Resource material centrally located where they would be available for use with the instructional unit.

4) Enjoyed this unit and the students enjoyed it too.

S-108 Airport Awareness

1) Availability of more films on jets, with emphasis on career education.

2) Suggest more filmstrips that would be appropriate for use with the unit.

3) Amount of time allowed for instruction was too short.

S-110 Career Clusters

1) Availability of materials was inadequate.

2) Pre and post-test was not objective enough.

3) Not enought time to schedule field trips.

4) Provide a key for the test.

5) Too difficult for fifth grade students.

6) Teacher strategies need to be more informative.

S-111 Career Awareness

1) Not enough time allowed to properly teach the unit.

S-210 Growing with Responsibilities

1) Film strips called for in the unit were not available.

2) Unit was boring to most of the students.

3) Unit might be revised and taught at a lower grade level.

S-211 Self Awareness

1) The unit is so abstract that good concrete ideas still seemed vague.

S-408 Dealing with Decisions

1) Activities were either too time consuming or too difficult.

2) Need more worksheet type activities.

3) Unit was lacking in Audio-Visual aids.

4) Films and filmstrips were not available.

5) Perhaps more of the performance objectives could be activities. Third grades learn by doing not by just talking.

6) Include more role playing in the activities.

7) Use stories that are more relevant to the experiences of the children.

S-505 What, When & Why

1) Pre and post test show the front of the coins but the back of the coins were shown in the unit on those pages to be used as dittos.

2) More creativity on the part of the teacher needs to be added.

3) Test could be more comprehensive.

4) Individual participation and involvement called for in the unit is difficult for a class of thirty.

S-508 Money Matters

1) Goals and performance objectives were realistic and pertinent except for goal three. Goal three was too advanced in concept.

2) Goal one stresses job prestige for specialists. Career education should stress the dignity of work, all work; regardless of the amount of money made.

S-509 Yearnings and Earnings

1) Unit is excellent, because it is so practical.

2) Need more worksheets

3) Unit may be a little above the fourth grade students comprehension.

S-510 Sailing With Sales

1) Students enjoyed this unit and interest was high.

2) Filmstrips and records that are recommended should be on hand.

S-511 What's My Line

1) Not enough resource materials

2) Teacher strategies are repeated and incomplete.

3) Not enough time allowed.

4) More background information for the teacher.

5) A map of the state and U.S. should be included in the Appendix.

6) Filmstrips that were an essential part of the unit were not available.

S-608 Eye and Ear Tools

1) Goal (no. 3) statement seemed unrelated to the rest.

2) Test copy of unit incomplete. Goal No. 4 not included even in preliminary statement of goals.

3) Performance objectives are not specific in stating what per cent of students accomplish them or in method used (oral, written).

4) Resource materials were not available.

5) Activities were too easy.

S-609 Tooling Around

1) Unit may be too difficult for fourth grade level.

S-710 Readin', Writin', and Relevance

1) Include more teacher information concerning career clusters for performance objective 1.12

2) Resource materials should be more available.

3) Pre test question No. 1 had the wrong answer, choice A would have been better.

4) Test vocabulary was too difficult.

Table 21 provides individual teacher responses to questions contained in the Teacher Evaluation Form (see Appendix D). The teacher responses indicate their feeling about the useability of each Unit taught. Since the Units were in the Pilot Test stage of development one can expect that refinements to the Units would be set forth by the teachers. The number of teacher responses for each Unit should be compared with the number of times the Unit was replicated (the number below each Unit in the heading of Table 21). Generally all Units are in need of refinements as observed by the type of teacher responses.

TABLE 21 TEACHER EVALUATION OF INSTRUC

Questions	S-99	S-108	S-109	S-110	S-111	S-210	S-211	S-408	S-5
	1[a]	2	2	3	1	2	2	2	4
1. Student Ach. of goals									
a. All goals			2	1		2	1	1	
b. Only some goals	1	2		2	1	2	1	1	4
c. None of the goals									
2. Perf. obj. related to goal(s)									
a. All perf. obj. directed toward attainmnt. of goal(s)	1	2	2	2	1			1	2
b. Some perf. obj. directed tward attainmnt. of goal(s)				1	2	2	2	1	2
c. No perf. obj. directed tward attainmnt of goal(s)									
3. How learng. actvits. dlvrd. perf. obj.									
a. All learng. act. was effective.	1	1	1	1	1				2
b. Some learng. acts. were effective		1	1	2		2	2	2	2
c. No learng. acts. were effctiv.									
4. Percent of units learng. acts. were used									
a. 100%									
b. About 75%	1	2	1	2					3
c. About 50%								1	
d. About 25%									
e. Less than 25%									

21 TEACHER EVALUATION OF INSTRUCTIONAL UNITS

10	S-111	S-210	S-211	S-408	S-505	S-508	S-509	S-510	S-511	S-608	S-609	S-710
	1	2	2	2	4	2	3	3	3	2	3	3
		2	1	1				2			1	2
1		2	1	1	4	2	3	1	3	2	2	1
1				1	2	1	2	3	2	2	2	3
2	2	2	2	1	2	1	1		1			
1					2	1	2	2		1	2	2
	2	2	2	2	2	1		1	3	1	1	1
							1					
								1		1		
					3	1	2	1	1	1	2	2
				1	1	1	1	1	2	1	1	1

TABLE 21 (cont.) TEACHER EVALUATION OF INSTRUCTIONAL UNITS (CONTI

Questions	S-99	S-108	S-109	S-110	S-111	S-210	S-211	S-408	S-505	S-5
	1[a]	2	2	3	1	2	2	2	4	2
5. Unit activities organized sequently										
a. Yes	1	2	1	2	1	2		1	5	1
b. No			1				2	1		
c. Not applicable				1						1
6. Specified duration of unit compared to time necessary to effectively teach it										
a. Specfd. time too long	1					1				
b. Specfd. time sufficient		2		1				1	1	
c. Specfv. time too short			2	2	1	1	2	1	3	2
d. Time not specfd.										
7. Extent unit held class interest										
a. Great inst.	1	2	1	1	1		1		4	
b. Some inst.			1	2		1	1	2		2
c. No inst.						1				
8. Overall rating										
a. Retain unit/ minor revisions	1	2	1	1	1			1	3	2
b. Retain unit with exten. revisions							1	1		
c. Recnsdr usg. unit			1		1	2				
d. Drop the unit										
9. What goals were not taught										
a. Goal No.		2		5	3			4	2	1
b. Goal No.		2		4	4			5	3	3
c. Goal No.		3						3	5	4
d. Goal No.									6	

INSTRUCTIONAL UNITS (CONTINUED)

S-210	S-211	S-408	S-505	S-508	S-509	S-510	S-511	S-608	S-609	S-710
2	2	2	4	2	3	3	3	2	3	3
						3	2	2	3	3
	2	1	5	1	2		1			
		1		1	1					
								1		
								1	1	1
		1	1		1	1				
	2	1	3	2	2	2	3		2	2
						1		1	2	2
	1		4		1	2	3	1	1	2
1	1	2		2	2	1		1	1	2
							2	1	3	3
		1	3	2	2	2		1		
	1	1			1					
2						1				
							1			
							2			
		4	2	1	2	3	3	3	3	2
		5	3	3	3		4	4	4	
		3	5	4						
			6							

IV. SUMMARY, CONCLUSIONS, RECOMMENDATIONS

A. Summary

Primarily this study was conducted to investigate the instructional usefulness of selected Career Education Instruction Units in classrooms of school districts in Coconino County. The Units introduced in the classrooms were in the Pilot Test stage of development. Therefore, information obtained from this study can serve to assist persons to improve the utility of the Units tested before they are used more widely in other classrooms.

Student achievement and cost data were collected and displayed in order to provide the users of Career Education Instructional Units to more fully assess the complete requirements of implementing Career Education Instructional Units.

Selection of the Units to be included in the study and the classrooms was a joint effort of officials involved in the Coconino County Career Education Program. Data collection forms were developed for use in the study and the data collected was tabulated and processed through the use of a computer. Detail computer printouts have been transmitted to the Director of the Coconino County Career Education Program. This report has provided through narration and Tables essential data about the findings of this study.

B. Conclusions

1. Student Achievement

Data presented in the Tables reporting student achievement show that all Units did produce learning gains for the majority of students.

Even though the mean proficiency levels were not extremely high, students did acquire many career education concepts.

An analysis of the mean pre-test and post-test scored indicates that many students had a fairly high beginning knowledge of the learning materials and concepts prior to the instruction of the Unit. High entry knowledge tends to reduce the Unit's intended effectiveness. Also, the scheduling and timing of the study at the end of the school year and the shortness of time in which to prepare for the teaching of the Unit caused the achievement to be somewhat less than could usually be expected.

Achievement levels for Career Education Instructional Units was effected by the level of the student's I.Q., the same is generally true for any other type of instructional unit.

2. Cost and Cost-Effectiveness

The cost of implementing Career Education Instructional Units varied widely and was largely dependent upon the teacher cost, instructional time, materials, and equipment utilized in the instructional process. Costs also varied between districts and this again was due mainly to the above mentioned items.

Summary cost data for Units is of less value than the individual Unit cost data. Districts seeking to implement Units should expect a wide variation in costs, even for similar Units at the same classroom level.

Unit costs per student decrease in direct proportion with the number of students in the classroom. However, it is reasonable to expect that achievement will suffer if the number of students in the classroom becomes excessive. Also, classrooms with too few students caused costs to be prohibitive and did not seem to increase student proficiency.

3. Teacher Evaluation of Unit

Teachers were generally satisfied with the quality of the Units and were able to utilize most of the activities to obtain goal and objective achievement. Three main areas of difficulties were encountered. The teaching materials, supplies, and equipment required by the Unit were troublesome to acquire. In many instances teachers had to improvise and substitute other items instead of what was recommended in the Unit. This situation could be remedied by planning and ordering far in advance of teaching the Unit or redesigning the Unit required materials, supplies, and equipment. Another difficult area, a crucial one to the measurement of achievement, was the evaluation instruments; the pre- and post-tests. The tests included in the Unit were perhaps the weakest Unit component. The tests at the kindergarten, first, second, and third grades were difficult to administer and evaluate in terms of student performance. Some of the Units did not clearly set forth precise evaluation procedures.

A third problem area was in the goal, objective, and activity components. The goals and objectives were not as directly related as they might have been in some Units. Also, many activities seemed unrelated to the objectives.

Some goals were found non-useful in particular classroom situations and so were not taught. Thus, the Unit failed to be as useful as was originally intended by the developers. Considerable modification of the Unit was necessary before it could be taught.

C. Recommendations

The following recommendations are, for the most part, directed toward the refinements that could be made in the Units included in this study. The refinements of the Units will naturally have considerable

impact upon student achievement and the costs of teaching the Unit. The recommendations are:

1. Each Unit should be carefully analyzed to ascertain that it is appropriate for the student and grade level it is designed for in terms of the student's intellectual skill level. Since many pre-test scores were quite high on the Units, it appeared that much of the learning concepts were already acquired by the students prior to the teaching of the Units.

2. Goals, objectives, and activities must be directly related to each other. This was not so in some of the Units.

3. Instructional materials, supplies, and equipment should be available to the teacher. Many Units required items that teachers were unable to obtain.

4. Detailed teaching procedures and alternative approaches should be clearly set forth in each Unit.

5. Reliable and valid testing instruments must be included in each Unit. Keys for each test should be included for use by the teacher. More than one evaluation instrument should be prepared for each Unit so that the teacher can have available several sources of data for assessing the progress of each student.

6. Each Unit should be developed or be capable of being modified by the teacher to meet the individual learning needs of his (her) students. Perhaps the Unit should be developed by each individual district's teachers with the aid and assistance of qualified instructional program experts or curriculum designers.

7. All Units included in this study are in need of refinement before larger useage. This was expected since all Units were in the Pilot Test stage of development.

8. A continuous program of assessment should be maintained which will provide student achievement and cost data for each Unit that is taught in the classroom. The result of data collection should lead to further refinement of each Unit.

APPENDICES

APPENDIX A- COCONINO COUNTY CAREER EDUCATION COST-EFFECTIVENESS STUDY ADMINISTRATIVE-COST DATA INSTRUMENT

APPENDIX B - COCONINO COUNTY CAREER EDUCATION PROGRAM PILOT TEST PROGRAM for INSTRUCTIONAL UNITS- STUDENT ACHIEVEMENT FORM

APPENDIX C- COCONINO COUNTY CAREER EDUCATION COST-EFFECTIVENESS STUDY- COST DATA INSTRUMENT

APPENDIX D- COCONINO COUNTY CAREER EDUCATION PROGRAM- PILOT TEST TEACHER EVALUATION INSTRUMENT

APPENDIX E- COCONINO COUNTY CAREER EDUCATION- PILOT TEST WORKSHOP

APPENDIX F- COCONINO COUNTY CAREER EDUCATION- PILOT TEST WORKSHOP

APPENDIX A

COCONINO COUNTY CAREER EDUCATION

COST-EFFECTIVENESS STUDY

ADMINISTRATIVE COST DATA INSTRUMENT

Because of the nature of the information needed and the fact that staff teaching the instructional packages have other forms to complete we are asking you, the administrative staff to provide us with the following information and/or forms. Thank you for your help.

I. District _____

II. Cost Information

A. Teachers' Name	School	Classroom Enrollment	Salary
a. _____	_____	_____	_____
b. _____	_____	_____	_____
c. _____	_____	_____	_____
d. _____	_____	_____	_____
e. _____	_____	_____	_____
f. _____	_____	_____	_____
g. _____	_____	_____	_____
h. _____	_____	_____	_____
i. _____	_____	_____	_____
j. _____	_____	_____	_____
k. _____	_____	_____	_____
l. _____	_____	_____	_____
m. _____	_____	_____	_____
n. _____	_____	_____	_____
o. _____	_____	_____	_____
p. _____	_____	_____	_____

B. School teaching contract length _____days (number of days in teaching year).

C. Workday length in hours for teachers _____Hrs.

D. Percentage for fringe benefits paid by the school district for teachers _____%

E. Average district teachers salary $_____

F. Amount paid per mile by district for private vehicle use _____¢

G. Para-Professionals hourly salary $_____

H. Percentage for fringe benefits for para-professionals in the classroom _____%

I. Bus Operation and maintenance cost per mile 72-73 _____

J. Bus drivers houurly salary _____

K. Percentage for fringe benefits for bus driver _____%

L. Amount provided per pupil for normal classroom instructional supplies, i.e., paper, chalk, etc.

Elementary _____
Junior High School _____

M. Number of instructional days in the school year for the student _____days

N. Number of hours in a normal school day for the student _____Hrs.

The Coconino County Career Education Project Staff thanks you for your time and cooperation in completing this form and providing the additional information requested.

APPENDIX B

COCONINO COUNTY CAREER EDUCATION PROGRAM
PILOT TEST PROGRAM for INSTRUCTIONAL UNITS

STUDENT ACHIEVEMENT FORM

The purpose of this study is to examine program effectiveness as it relates to the cost of implementation. This form is for recording the data needed to determine student achievement for the Career Education Instructional Unit (hereafter referred to as the Unit). It is requested that you please provide the following information. If you have any problems or questions please contact your Career Education Coordinator or Dr. Sam W. Bliss, Box 5774, Northern Arizona Univerisity, Flagstaff, Arizona 86001, phone 523-4470.

Thank you for your time and cooperation in this project.

I. UNIT DATA

a. District _____

b. School _____

c. Unit Title _____

d. Teacher Name _____
Last First MI

e. Classroom No. _____

f. Number of students enrolled at start of Unit _____

g. Grade Level or Levels _____

II. STUDENT DATA

Student Name	M/F	Age	I.Q.	Ach. Level	Mental Age	Pre-Test Score	Post-Test Score	Unit Gain
1.								
2.								
3.								
4.								
5.								
6								
7.								
8.								

STUDENT DATA (continued)

Student Name	M/F	Age	I.Q.	Ach. Level	Mental Age	Pre-Test Score	Post-Test Score	Unit Gain
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								
21								
22.								
23.								
24.								
25.								
26.								
27.								
28.								
29.								
30.								
31.								
32.								
33.								
34.								
35.								
36.								

APPENDIX C

COCONINO COUNTY CAREER EDUCATION

COST-EFFECTIVENESS STUDY

COST DATA INSTRUMENT

The Coconino County Career Education Program is conducting a study of the cost-effectiveness of career education in the school districts of Fredonia, Flagstaff, Page, Tuba City, and Williams. This form is for the cost analysis portion of the study, and is to be completed by the teacher as he or she teaches the Career Education Instructional Unit (hereafter referred to as the Unit). This form is to be returned with the Unit.

Your time and cooperation is essential for the successful completion of this project. We sincerely thank you for your assistance.

I. Descriptive Data

A. Unit Title: _____

B. Unit Code: _____

C. Teacher's Name: _____

D. Grade or Grades: _____

E. Date Unit Started: _____

F. Date Unit Completed: _____

II. In-Service Training

A. What were the dates and the amount of time you spent in workshops, orientation and training sessions preparing to teach this Unit?

Date _____ Minutes involved _____

Date _____ Minutes involved _____

Date _____ Minutes involved _____

B. Was any time involved during the normal contract day *for transportation from your school to meetings or workshops dealing with the career education units? If so, indicate number of minutes so used.

Travel time _____(in minutes) Was school transportation

Travel time _____(in minutes) provided? Yes__ No__

III. Field Trips

Indicate dates, departure and return time, and destination of field trips taken in connection with teaching this unit. Attach additional sheet if space provided is insufficient.

A. Date _____ Destination _____

Departure time _____ Time of Return _____

Mode of transportation _____

Vehicle starting mileage _____ Vehicle ending mileage _____

B. Date _____ Destination _____

Departure time _____ Time of Return _____

Mode of transportation _____

Vehicle starting mileage _____ Vehicle ending mileage _____

C. Date _____ Destination _____

Departure time _____ Time of Return _____

Mode of transportation _____

Vehicle starting mileage _____ Vehicle ending mileage _____

IV. Additional Cost Items

If any additional items had to be ordered or purchased to teach this specific unit, please identify the item and cost.

A. Item _____ Cost _____

B. Item _____ Cost _____

*Contract day means the normal working day as defined by your school district for the teaching year.

Additional Cost Items (continued)

C. Item _____ Cost _____

D. Item _____ Cost _____

E. Item _____ Cost _____

V. Classroom Instruction Costs

On this page, and the reverse side if necessary, enter information regarding actual instructional time. Please record the information carefully, in actual chronological order as the unit is taught in your classroom.

Date	Planning Time in Minutes	Teaching Time in Minutes	Para-Professional Time in Minutes Number Min.

I. Resource Materials

If any resource materials were used besides those that are contained as a part of this unit please list them. Be specific, as to titles and cost.

umber	Medium	Title	Cost per Item	
			Rental	Purchase

APPENDIX D

COCONINO COUNTY CAREER EDUCATION PROGRAM

PILOT TEST TEACHER EVALUATION INSTRUMENT

Introduction

This instrument is designed to gather information which will be used to help refine Career Education Instructional Units (hereafter referred to as the Unit). As the instructor in the pilot test, you are the most qualified individual to provide this information. As this is a pilot copy of the unit, you will find that you will have many suggestions and comments for its improvement. It is important that while completing this instrument you are as specific as possible in suggesting improvements for the unit.

Read over the entire instrument as soon as you receive it. Please complete those parts of the instrument on which data are available as soon as possible. This will alleviate the problem of trying to recall at the end of the unit what actually took place. It is hoped the format of this instrument is such that it will take a minimal amount of your time.

Again we thank you for your part of this cooperative effort in developing a career education program.

Demographic Data

1. Unit Identification Title: _____

2. Unit Identification Code: _____

3. Name of School and District _____

4. Grade _____

Attitudinal Data

The following questions pertain to the unit as you received it, not to changes that you may have introduced while teaching the unit.

a. _____ All of the unit goals were achieved.
b. _____ Only some of the unit goals were achieved.
No. of goal(s) not achieved _____
c. _____ None of the unit goals were achieved.

2. Which of the following best describes how the performance objectives related to the goal(s) of the unit?

a. _____ Each performance objective was directed toward the attainment of the goal(s) of the unit.
b. _____ Only some performance objectives were directed toward the attainment of the goal(s) of the unit.
c. _____ None of the performance objectives was directed toward the attainment of the goal(s) of the unit.

3. Which of the following best describes how the unit learning activities delivered the unit performance objective?

a. _____ Each learning activity was effective in delivering the performance objective(s).
b. _____ Only some learning activities were effective in delivering the performance objective(s).
c. _____ No learning activities were effective in delivering the performance objective(s).

4. Approximately what percent of the unit's learning activities did you use?

a. _____ All of the activities (100%)
b. _____ About 75%
c. _____ About 50%
d. _____ About 25%
e. _____ Less than 25%

5. Were the unit learner activities organized sequentially with respect to levels of difficulty?

a. _____ Yes, sequence was adequate
b. _____ No, sequence needs revision
c. _____ Not applicable

6. How does the specified duration of the unit compare to the amount of time you felt was necessary to effectively teach it?

a. _____ The specified time was too long.
b. _____ The specified time was sufficient.
c. _____ The specified time was too short.
d. _____ Time was not specified.

7. To what extent did the unit hold class interest?

a. _____ Most of the class showed great interest.
b. _____ Most of the class showed some interest.
c. _____ Most of the class showed no interest.

8. Overall rating:

a. _____ Retain the unit with minor revisions as indicated in this form.
b. _____ Retain the unit with extensive revisions as indicated in this form.
c. _____ Seriously reconsider using the unit.
d. _____ Drop the unit from consideration.

9. What goals were not taught?

A. List goal number(s)

Goal _____ Goal _____ Goal _____ Goal _____

B. Reasons not taught

Goal No. _____ Reason _____

_____

Goal No. _____ Reason _____

_____

Goal No. _____ Reason _____

_____

Goal No. _____ Reason _____

_____

Suggest any further changes that you feel should be made in order to improve the unit.

_____

_____

_____

_____

APPENDIX E

COCONINO COUNTY CAREER EDUCATION

PILOT TEST WORKSHOP

SCHOOL DISTRICTS: Flagstaff, Tuba City and Williams

PLACE: Flagstaff Supervisors Office
North Izabel
South of Coconino High School

DATE: April 25, 1973 TIME: 6:00p.m. - 9:30p.m.

PARTICIPANTS: Flagstaff, Tuba City and Williams
Teachers pilot testing instructional units

Flagstaff Teachers

Teachers to be identified at a later date

Tuba City

Grade	Name
Kindergarten	Ms. Feibus
3rd	Ms. Richmond
3rd	Ms. Lockett
4th	Ms. Parker
5th	Ms. Brietenbach
5th	Ms. Baca
6th	Ms. Alma Thomas

Williams

Grade	Name
3rd	Marilyn Duffy
3rd	Charlene Myers
4th	Ruddy Sanchez
5th	Dale Winchester
6th	J. C. Fain (Mr.)
8th	Richard Hoyt

TOPICS TO BE DISCUSSED

6:00p.m. - 6:20p.m.	I.	Introduction A. Participants B. Workshop Procedures
6:20p.m. - 8:00p.m.	II.	Pilot Test Procedures
8:00p.m. - 9:00p.m.	III.	Distribution and Discussion of Career Education Instructional Units and Data Collection Forms
9:00p.m. - 9:30p.m.	IV.	Summary of Pilot Test Activities

APPENDIX A

COCONINO COUNTY CAREER EDUCATION

PILOT TEST WORKSHOP

SCHOOL DISTRICTS: Page
Fredonia

PLACE: Page Elementary School Library

DATE: April 17, 1973 TIME: 4:30p.m.

PARTICIPANTS:

Page Teachers		Fredonia Teachers	
Grade	Name	Grade	Name
Kindergarten	Thelm LaFever	3rd grade	Paul Heaton
3rd grade	Lucille O'Riely	5th grade	Velden Black
	Alice Koeje	6th grade	Dan Haycock
4th grade	June Wakefield		
5th grade	Beverly Huntley		
	Allyn Watson		
6th grade	Betty Holder		

TOPICS TO BE DISCUSSED

1:00p.m. - 1:20p.m.	I.	Introduction A. Participants B. Workshop Procedures
1:20p.m. - 2:00p.m.	II.	Pilot Test Procedures
2:00p.m. - 4:00p.m.	III.	Distribution and Discussion of Career Education Instructional Units and Data Collection Forms
4:00p.m. - 4:30p.m.	IV.	Summary of Pilot Test Activities